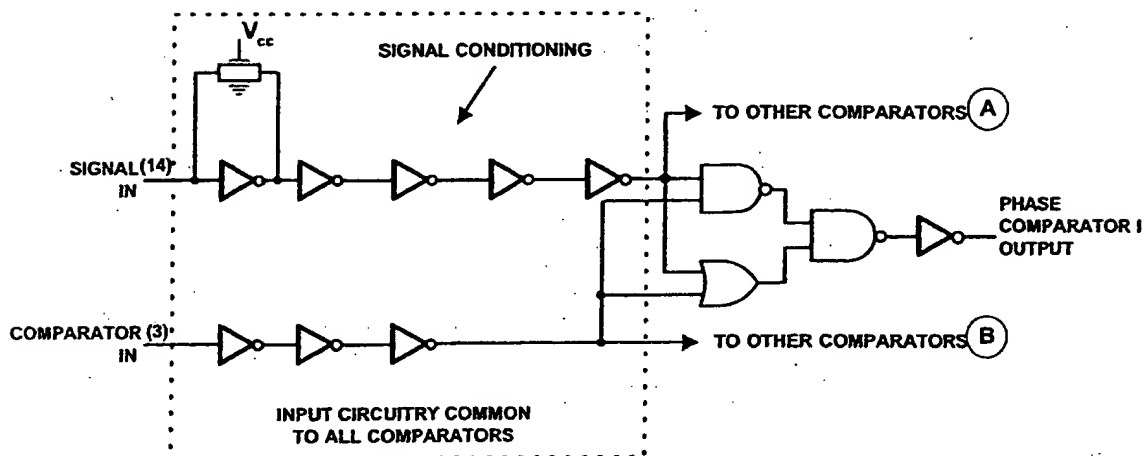
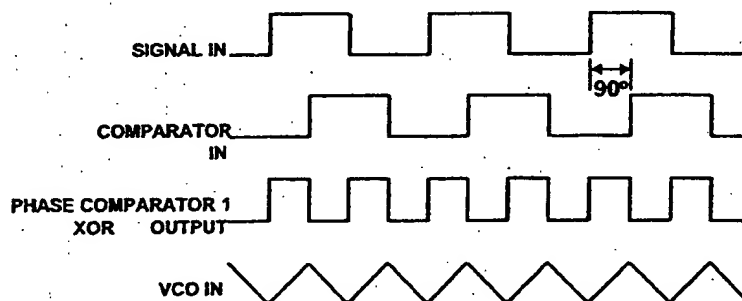


(A) BASIC XOR PHASE COMPARATOR

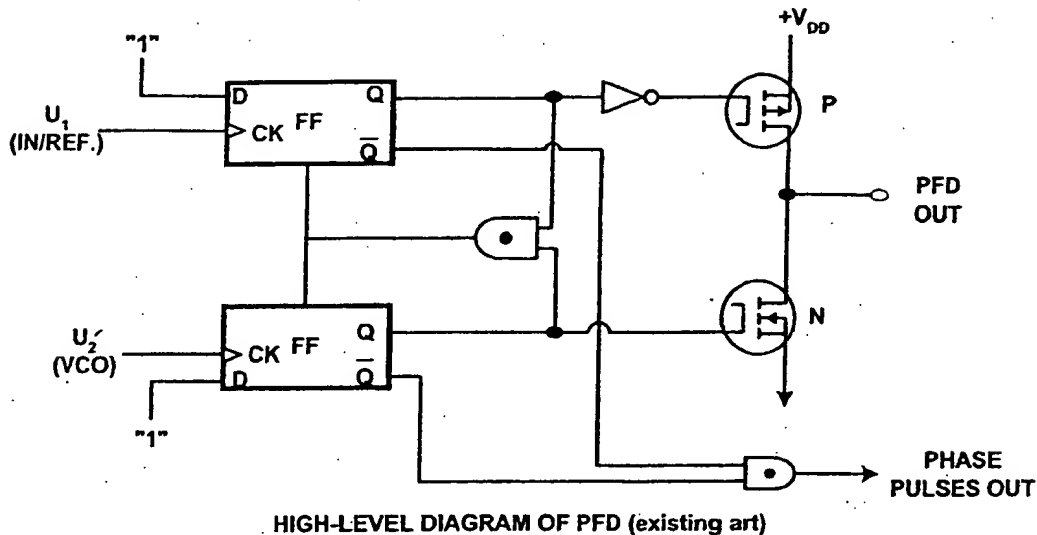


(B) DETAILED ON-CHIP IC CIRCUITRY IN 74HC4046

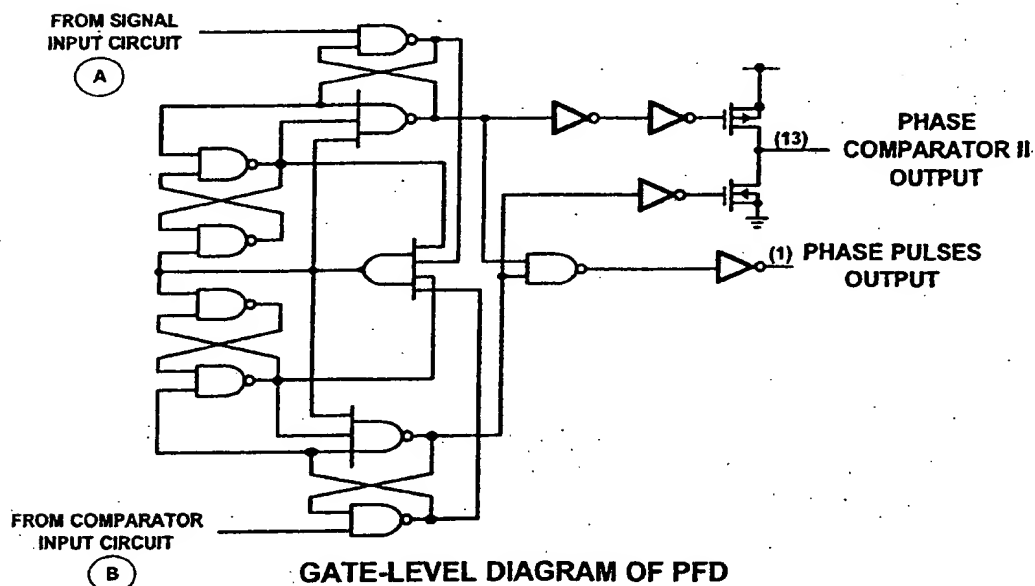


(C) TYPICAL XOR DETECTOR WAVEFORMS

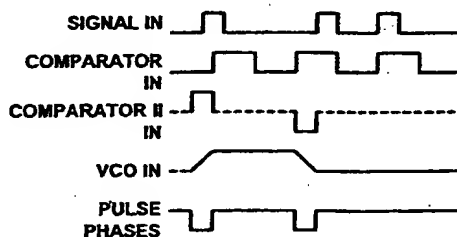
Fig. 4 (Prior Art)



HIGH-LEVEL DIAGRAM OF PFD (existing art)



GATE-LEVEL DIAGRAM OF PFD



TIMING AND WAVEFORMS OF PFD (existing art)

Fig. 4 cont. (Prior Art)

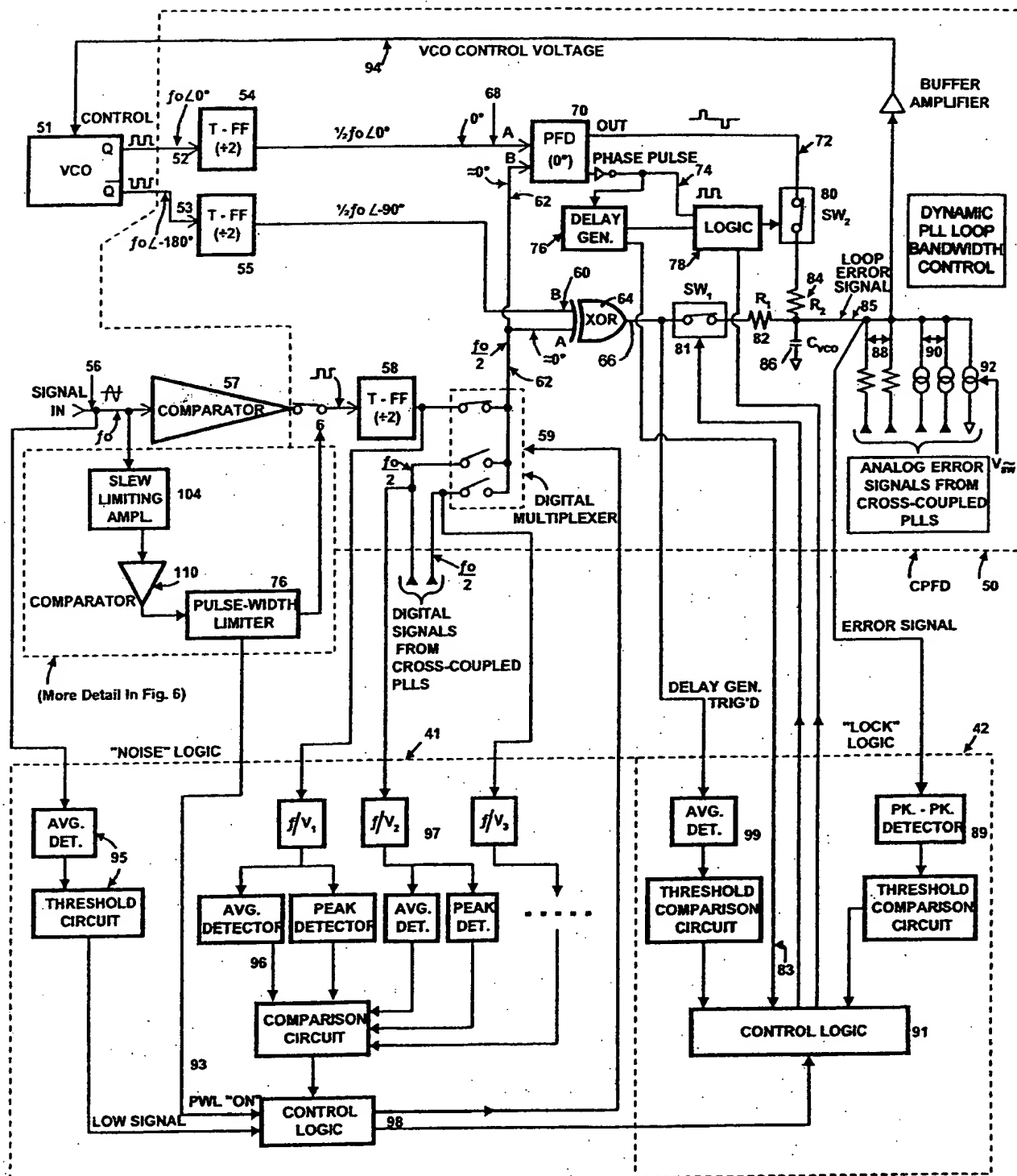


Fig. 5

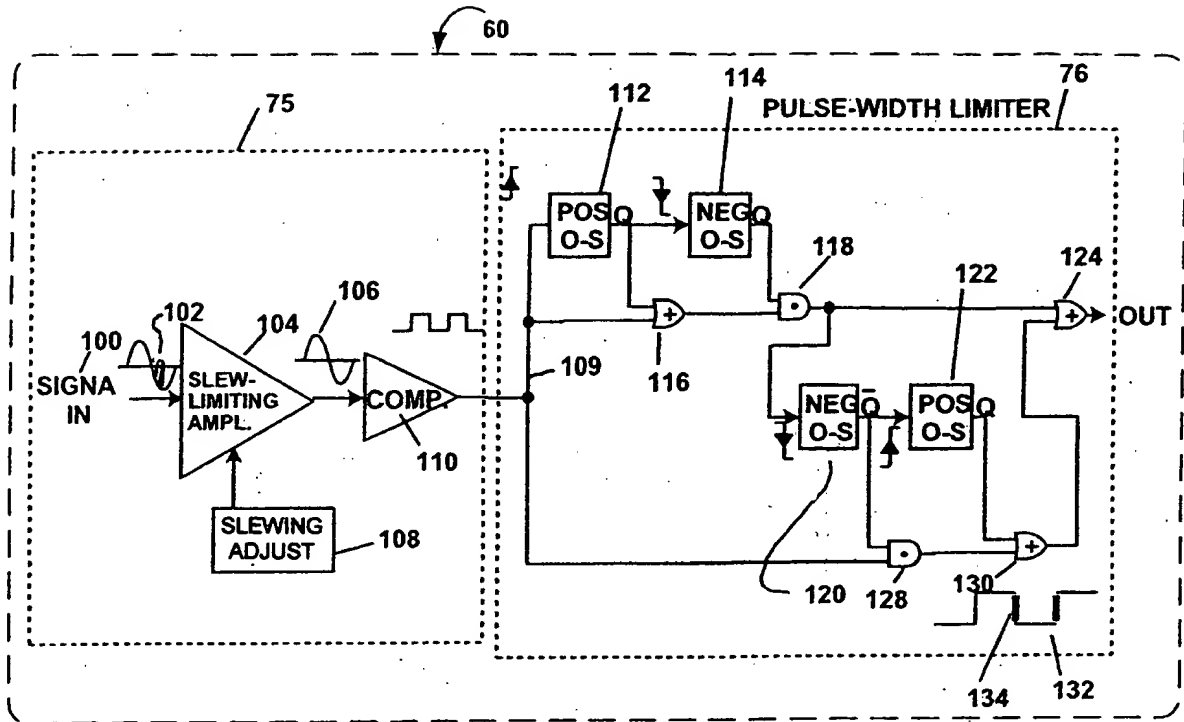


Fig. 6